Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

FAUNAS OF THE DEVONIAN SECTION NEAR ALTOONA, PA.

EDWARD M. KINDLE
United States Geological Survey, Washington, D. C.

It is the purpose of this paper to present only the more salient faunal features of the section. The data presented are the incidental results of studies and collections made primarily for the elucidation of the areal geology of the region.

The collections on which the faunal lists are based represent only a small fraction of the species which might be obtained by exhaustive collecting. They are sufficiently full, however, to indicate quite clearly the relationship of the several faunas which they represent to those of the standard Devonian section of New York. It is a well-known fact that the Devonian section, as developed in New York suffers great changes, both lithologic and faunal, in the Allegheny region to the southward. But the precise nature of these changes why and where they occur, are not so well known. At present the published data, which can be utilized in the study of the larger problems of Devonian stratigraphic paleontology of the Allegheny region, relate to a very few and widely scattered sections. Until the results of many more carefully studied sections are available, many fundamental questions of stratigraphic paleontology can be answered only hypothetically. The bearing of such local studies on wider problems seems to justify the present paper.

Base of section.—Several hundred feet of gray shaly to heavy-bedded limestones lie at the base of the section which is here described. This portion of the section lay outside of the area under investigation, and no attempt was made to recognize the several members of the New York section which are probably represented.

Oriskany fauna.—A coarse-grained, buff sandstone generally represents the Oriskany horizon. At the east side of the Pennsylvania Railroad, southwest of Bellwood, the Oriskany sandstone contains the following species:

Spirifercumberlandias	a
Rensselaeria sp.	r
Beachi suessana	c
Dalmanella cf. perelegans	r
Gypidula pseudogaleata	r

Southwest of Altoona the Oriskany shows about the same lithologic and faunal characteristics as near Bellwood.

The Oriskany, as seen in the Altoona section in the eastern part of the town of Altoona, represents a facies differing both lithologically and faunally somewhat from the same horizon as it generally appears elsewhere. The rock, which is an extremely fine-grained, soft, buff sandstone, contains one or more species of *Beyrichia* in great abundance. Other common species are the following:

Chonetes sp.
Anoplotheca dichotoma
Rhipidomella cf. oblata
Spirifer sp.
Pterinopecten sp.
Dalmanites sp.
Conularia sp.

Marcellus fauna.—Only three species have been recognized in the Marcellus shales. These are characteristic Marcellus forms, and are as follows:

Strophalosia truncata	r
Leiorhynchus limitare	a
Styliolina fissurella	a

Exposures which probably represent the Marcellus in excavations in East Altoona yielded no fossils.

Hamilton.—The shales and sandstones of the Hamilton have afforded the following species:

Tropidoleptus carinatus
Anoplotheca camilla
Chonetes scitula
Chonetes vicinus
Spirifer tullius
Spirifer mucronatus
Martinia subumbona
Stropheodonta perplana
Reticularia fimbriata
Palaeoneilo cf. bellistriata
Orthonota cf. parvula
Grammysia arcuata
Grammysia bisulcata
Aviculopecten cf.princeps
Coleolus aciculum
Pleurotomaria sp.
Phacops rana

These are all well-known species in the New York Hamilton. *Spirifer tullius* is common in the upper part of the section, and appears to be confined to this portion of the section, as it is reported to be in the New York sections.[1] *Martinia subumbona* has been observed at only one locality, several miles to the southwest of Altoona. It occurs abundantly in an outcrop in the wagon road about 1 mile northeast of Queen.

The Hamilton appears to be generally less richly fossiliferous than it is in the central New York sections.

Genesee fauna.—The Tully limestone is absent from the section and the dark sandy shales of the Hamilton are followed by the fissile black shale of the Genesee. The Genesee shale of this section is identical in lithologic features with the Genesee of the Finger Lake region. Like the Genesee of the Cayuga Lake section, fossils are very scarce in it. Only two species have been observed. These are:

Styliolina fissurella
Sandbergeroceras sp. undt.

Nunda fauna.—The Genesee is succeeded by the grayish sandy shales and flags of the Nunda. The fauna which this series of beds has afforded comprises the following species:

Cladochonus sp.
Palaeoneilo petila
Pterochaenia fragilis
Pterochaenia cashaquae
Paracardium doris
Paracardium delicatulum
Buchiola retriostriata
Ontaria cf. accinta
Phragmosoma natator
Probeloceras lutheri
Styliolina fissurella
Coleolus aciculum

This fauna is typical of the Nunda of western New York. All of the species in it are found in the western New York fauna, while none of the forms characteristic of the Ithaca facies occur in it.

During the interval represented by the shales and sandstones of the Nunda two marine faunas, entirely distinct in origin and composition, occupied that portion of the Devonian sea which extended over the present area of central and western New York, central Pennsylvania, and western Maryland. The habitat of these faunas extends southward into Virginia and West Virginia to a point not yet determined. In New York, where these contemporary faunas have been very thoroughly studied, one of them, usually called the Ithaca fauna, is found occupying an area lying in general to the eastward of that held by the other. The eastern fanua was the inshore fauna while the western facies was the more pelagic and probably lived in deeper waters. That the two faunas were limited to their respective areas solely by marine conditions, such as ocean currents, or differences in depth or temperature, is indicated by the frequent interleaving and intermingling of the faunas in sections located near the general boundary between the two faunal provinces. The two Nunda sections nearest the Altoona section which have been studied in Pennsylvania are the Catawissa and Hollowing Run sections, located at the Susquehanna River, to the northeast of Altoona. Comparison of the Nunda faunas of the Susquehanna and the Altoona sections shows that they represent respectively the eastern and western facies of the formation. The dominance of the Ithaca fauna is as complete in the Susquehanna sections[1] as is that of the western fauna in the Altoona section. That the Altoona section is more remote from the old shore-line of the Nunda sea than the Susquehanna sections is indicated by their respective geographic positions as well as by their faunas. The Altoona section is located just at the Allegheny front, while the Susquehanna sections lie well to the southeast of it.

---

[1] Sixteenth Annual Report, State Geologist of New York, 1898, p. 273; *Bulletin No. 206, U. S. Geological Survey*, p. 47.

Chemung fauna.—No very sharp line can be drawn on a lithologic basis between the Nunda and the Chemung. The faunas, however, are very distinct, as the following list of the Chemung species indicates:

Orbiculoidea doria
Stropheodonta mucronata
Spirifer disjunctus
Schizophoria striatula
Orthothetes (Schuchertella) chemungensis
Atrypa hystrix
Atrypa reticularis
Delthyris mesacostalis
Dalmanella tioga
Productella lachrymosa
Productella cf. speciosa
Spirifer mesastrialis
Camarotoechia contractavar.
Camarotoechia sappho
Ambocoelia gregaria
Leiorhyncus mesacostale
Stropheodonta cf. demissa
Strohpeodonta perplana var. nervosa
Chonetes scitula
Productella cf. hallana
Leptodesma protextum
Leptodesma lichas
Leptodesma sp.
Pterinea cf. dispanda
Loxonema terebra
Edmondia sp.
Schizodus pauper
Modiomorpha subalata var. chemungensis
Stenaster sp.

---

[1] The faunas of these sections are listed in *Bulletin No. 244*, U. S. Geological Survey, pp. 78, 91.

This assemblage of species is a representative Chemung fauna, and does not differ notably from the Chemung facies as developed at the type locality on the Chemung River. Like the latter, it includes *Spirifer mesastrialis*, and some other forms which come up from lower horizons, in association with such characteristic Chemung forms as *Spirifer disjunctus*, *Dalmanella tioga*, and *Stropheodonta mucronata.* These three species may be considered pre-eminently characteristic of the Chemung. Their appearance in the sections is coincident with the advent of the Chemung fauna in the Allegheny province, and they remain throughout its stay in the region. In a recent publication[1] it is stated that *Spirifer disjunctus* does not appear in the sections till the "period of Chemung deposition was well-nigh over." The writer, however, has collected this species in one of the sections included in the above-mentioned report, 200 feet below the base of the Chemung, as drawn on the map which accompanies it. It occurs also very near the base of the Chemung fauna to the northeast of the area discussed in the paper. The faunas, therefore, appear very clearly to controvert the statement in question Although *Spirifer disjunctus* is frequently a rare species in the lower part of the Chemung, as it often is in the upper part, the writer's observations indicate that it is generally present at or near the base of the Chemung in some of the sections of any given area, and that the earliest appearance of the Chemung fauna is generally coincident with the advent of *Spirifer disjunctus* southwest of Altoona. In a section near Queen, southwest of the Altoona section, this species occurs near the base of the Chemung. In the Virginia sections it occurs inthe lower Chemung, as it does in New York.

---

[1] *Bulletin No. 81,* New York State Museum, p. 21.